

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims

1-80 (Cancelled)

81. (New) A method of base station change, comprising the steps of:
the base station transferring packet switched communications between a mobile station and a support node;

wherein the base station change is of a lossless type allowing lossless base station change of packet switched communications in unacknowledged mode between the mobile station and the support node; and,

wherein the support node, acting as a source support node during the base station change, forwards maintained sequence number information to a target support node of the base station change when the source and target support nodes are different.

82. (New) The method according to claim 81, wherein a protocol entity maintains N-PDU send and receive sequence numbers and GTP T-PDU uplink and downlink sequence numbers for each packet flow subject to base station change of lossless type, the support node acting as a source support node during the base station change and forwarding maintained sequence number information to a target support node of the base station change.

83. (New) The method according to claim 82, wherein downlink N-PDU and downlink GTP T-PDU sequence numbers are provided along with each N-PDU forwarded from the source support node to the target support node.

84. (New) The method according to claim 82, wherein LLC data buffered in a source BSS, which data has not been sent to, or acknowledged by, the mobile station at

the point in time when the source BSS sends the PS handover command message to the mobile station, is deleted.

85. (New) The method according to claim 84, wherein a status message is sent back to the source support node telling it how many LLC PDUs have been detected.

86. (New) The method according to claim 85, wherein the status message provides part of the one or more deleted LLC PDUs.

87. (New) The method according to claim 86, wherein the status message provides the header of the one or more deleted LLC PDUs.

88. (New) The method according to claim 82, wherein a set of N-PDUs sent down to the source BSS are buffered in the support node for each packet flow subject to lossless PS handover.

89. (New) The method according to claim 82, wherein a PS handover command message contains an RLC ACK/NACK report allowing a mobile station to determine which one or more N-PDUs have been completely received by the network.

90. (New) The method according to claim 82, wherein a mobile station starts uplink transmission, upon handover to a target cell, by an estimated next uplink N-PDU that was not acknowledged by lower layers in a source cell from which the mobile station was handed over to the target cell.

91. (New) The method according to claim 82, wherein a PS handover command sent from the support node to a source BSS includes an expected Receive N- PDU sequence number at which a mobile station should start transmission in a target cell for each uplink packet flow subject to lossless handover.

92. (New) The method according to claim 82, wherein a mobile station buffers one or more uplink N-PDUs which have been confirmed according to RLC.
93. (New) The method according to claim 82, wherein uplink and downlink G-PDU sequence numbers associated with uplink and downlink N-PDUs are recorded while in unacknowledged mode between the mobile station and the support node.
94. (New) The method according to claim 81, wherein the base station change allows an entire data transfer session in unacknowledged mode.
95. (New) The method according to claim 94, wherein the data transfer session is a session of data file transfer.
96. (New) The method according to claim 81, wherein the packet switched communications in unacknowledged mode between the mobile station and the support node concerns unacknowledged mode of LLC protocol.
97. (New) The method according to claim 81, further comprising the step of recording one or more sequence numbers of one or more protocol data units in both uplink and downlink.
98. (New) The method according to claim 97, wherein the protocol data units are N-PDUs.
99. (New) The method according to claim 97, wherein the protocol data units are G-PDUs.
100. (New) The method according to claim 81, wherein SNDCP sequence continuity is maintained across a support node involved in packet switched base station change.

101. (New) The method according to claim 81, wherein one or more SN-UNITDATA protocol data units include one or more N-PDU.

102. (New) The method according to claim 101, wherein an N-PDU number is included in a header of each SN-UNITDATA protocol data unit.

103. (New) The method according to claim 81, wherein a support node connected to a source base station or base station subsystem to be changed informs a mobile station, also connected to the base station or base station subsystem, on a next expected uplink protocol data unit to be received.

104. (New) The method according to claim 81, wherein a mobile station connected to a source base station or base station subsystem to be changed informs a source support node, also connected to the base station or base station subsystem, on a next expected down-link protocol data unit to be received.

105. (New) The method according to claim 103, wherein the base station or base station subsystem relays the information between mobile station and support node with no required processing of the information.

106. (New) The method according to claim 103, wherein the source base station or base station subsystem is allowed to continue receiving uplink data while emptying downlink buffers as a response to a PS Handover Command.

107. (New) The method according to claim 81, wherein the protocol data units are compliant with Sub-Network Dependent Convergence Protocol.

108. (New) The method according to claim 107, wherein SNDCP entities in a source support node buffers one or more downlink N-PDUs.

109. (New) The method according to claim 108, wherein the source support node buffers a number of N-PDUs corresponding to the delay attribute of the associated packet flow.

110. (New) The method according to claim 109, wherein the buffered N-PDUs are forwarded to a target support node during the base station change.

111. (New) The method according to claim 110, wherein the received forwarded N-PDUs in target support node are forwarded to the mobile station.

112. (New) The method according to claim 111, wherein the one or more N-PDUs are forwarded to the mobile station when the support node has received a PS Handover Complete message.

113. (New) The method according to claim 107, wherein one or more downlink N-PDUs are buffered in SNDCP entities in a target support node.

114. (New) The method according to claim 113, wherein the target support node buffers a number of uplink N-PDUs corresponding to the number of N-PDUs received from the source support node.

115. (New) The method according to claim 107, wherein one or more uplink N-PDUs are buffered in SNDCP entities in a mobile station.

116. (New) The method according to claim 115, wherein the mobile station buffers a number of N-PDUs corresponding to the maximum delay of RLC/MAC acknowledgement of transmission of LLC PDU.

117. (New) A mobile station for packet switched communications over a communications network including base stations and one or more support nodes, the mobile station comprising:

processing means operating according to one or more protocols for receiving protocol data units, the processing means operative to extract information for the mobile station to inform the network of a next expected downlink protocol data unit in association with packet switched base station change to allow lossless base station change of packet switched communications in unacknowledged mode.

118. (New) A mobile station for packet switched communications over a communications network including base stations and one or more support nodes, the mobile station comprising:

processing means operating according to one or more protocols for transferring protocol data units; and,

a receiver for receiving informing from the network on a next expected uplink protocol data unit in association with packet switched base station change to allow lossless base station change of packet switched communications in unacknowledged mode.

119. (New) The mobile station according to claim 117, wherein the protocol data units are compliant with Sub-Network Dependent Convergence Protocol.

120. (New) The mobile station according to claim 119, further comprising a buffer for buffering one or more uplink N-PDUs which have been confirmed according to RLC.

121. (New) The mobile station according to claim 120, wherein the mobile station starts uplink transmission upon handover to a target cell by transmitting an estimated next uplink N-PDU that was not acknowledged by lower layers in a source cell from which the mobile station was handed over to the target cell.

122. (New) The mobile station according to claim 121, wherein the processing means records, according to the Sub-Network Dependent Convergence Protocol, N-PDU sequence numbers of N-PDUs received or transferred.

123. (New) The mobile station according to claim 119, wherein the protocol data units include N-PDUs.

124. (New) The mobile station according to claim 121, further comprising a buffer for buffering uplink N-PDUs

125. (New) The mobile station according to claim 124, wherein the buffer size is sufficiently large for a number of N-PDUs corresponding to the maximum delay of RLC/MAC acknowledgement of transmission of LLC PDU to be buffered.

126. (New) The mobile station according to claim 119, wherein the information on next expected protocol data unit is transferred in a message initiating or completing a change of base station or handover as regards the mobile station.

127. (New) The mobile station according to claim 126, wherein the message initiating or completing a change of base station or handover is a PS Handover Command or PS Handover Complete message.

128. (New) A support node in a packet switched communications network including base stations for communications involving at least one mobile station, the support node comprising:

processing means operating according to one or more protocols for receiving protocol data units, the processing means extracting information for the support node to inform a mobile station of next expected uplink protocol data unit in association with packet switched base station change in unacknowledged mode of the at least one mobile station.

129. (New) A support node in a packet switched communications network including base stations for communications involving at least one mobile station, the support node comprising:

processing means operating according to one or more protocols for transferring protocol data units; and,

a receiver for receiving informing from the at least one mobile station on a next expected downlink protocol data unit in association with packet switched handover to allow lossless base station change in unacknowledged mode of packet switched communications.

130. (New) The support node according to claim 129, further comprising a protocol entity for maintaining N-PDU send and receive sequence numbers and GTP T-PDU uplink and downlink sequence numbers for each packet flow subject to base station change of lossless type, the support node acting as source support node during the base station change for forwarding maintained sequence number information to a target support node of the base station change.

131. (New) The support node according to claim 130, further comprising processing means for providing downlink N-PDU and downlink GTP T-PDU sequence numbers along with each N-PDU forwarded to the target support node.

132. (New) The support node according to claim 130, further comprising a buffer for buffering a set of N-PDUs sent down to the source BSS for each packet flow subject to lossless PS handover.

133. (New) The support node according to claim 130, further comprising processing means for including an RLC ACK/NACK report in a PS handover command message, thereby allowing a mobile station to determine which one or more N-PDUs have been completely received by the network.

134. (New) The support node according to claim 130, wherein a PS handover command sent from the support node to a source BSS includes an expected Receive N-PDU sequence number at which a mobile station should start transmission in a target cell for each uplink packet flow subject to lossless handover.

135. (New) The support node according to claim 130, further comprising recording means for recording uplink and downlink G-PDU sequence numbers associated with uplink and downlink N-PDUs while in unacknowledged mode between the mobile station and the support node.

136. (New) The support node according to claim 129, wherein the base station change is within GERAN or between GERAN and UTRAN.

137. (New) The support node according to claim 129, wherein a protocol entity of the support node maintains sequence continuity over the support node.

138. (New) The support node according to claim. 137, wherein the protocol entity operates according to SNDCP.

139. (New) The support node according to claim 129, wherein, upon completion of a packet switched base station change, the support node sustaining a changed to base station starts transmissions of protocol data units to the at least one mobile station at the next protocol data unit expected by the at least one mobile station.

140. (New) The support node according to claim 139, further comprising receive means, the transmissions being started upon the receive means receiving a PS Handover Complete message.

141. (New) The support node according to claim 128, wherein the protocol data units are compliant with Sub-Network Dependent Convergence Protocol.

142. (New) The support node according to claim 141, wherein the processing means records, according to the Sub-Network Dependent Convergence Protocol, N-PDU sequence numbers of N-PDUs received or transferred.

143. (New) The support node according to claim 141, wherein the processing means records, according to the Sub-Network Dependent Convergence Protocol, G-PDU sequence numbers of G-PDUs received or transferred.

144. (New) The support node according to claim 141, further comprising buffer means for buffering downlink N-PDUs

145. (New) The support node according to claim 144, wherein the buffer size is sufficiently large for a number of N-PDUs corresponding to a delay attribute of the associated packet flow.

146. (New) The support node according to claim 128, wherein the information on next expected protocol data unit is transferred in a message initiating or completing a change of base station or handover as regards the at least one mobile station.

147. (New) The support node according to claim 146, wherein the message initiating or completing a change of base station or handover is a PS Handover Command or PS Handover Complete message.

148. (New) The support node according to claim 144, wherein the buffered protocol data units are transferred upon packet switched base station change to a support node sustaining packet switched communications over the base station to which the at least one mobile station changed.

149. (New) The support node according to claim 148, wherein the buffered protocol data units are transferred upon completion of a preparation phase of the packet switched base station change.

150. (New) The support node according to claim 128, wherein the support node is a Serving GPRS Support Node.

151. (New) A base station entity in a packet switched communications network having at least one support node for communications involving at least one mobile station, the base station entity comprising:

receive means, transmit means and buffer means, wherein the buffer means buffers downlink protocol data units, the buffer means being emptied of protocol data units destined for the at least one mobile station, the protocol data units being transmitted by the transmit means upon the receive means receiving a command of packet switched base station change in unacknowledged mode, as regards the one mobile station, from the at least one support node.

152. (New) The base station entity according to claim 151, further comprising processing means for deleting buffered LLC data that has not been sent to, or acknowledged by, the mobile station at the point in time when the source BSS sends the PS handover command message to the mobile station.

153. (New) The base station entity according to claim 152, further comprising sending means for sending a status message back to the source support node telling it how many LLC PDUs have been deleted.

154. (New) The base station entity according to claim 153, wherein the status message provides part of the one or more deleted LLC PDUs.

155. (New) The base station entity according to claim 154, wherein the status message provides the header of the one or more deleted LLC PDUs.

156. (New) The base station entity according to claim 151, wherein the receive means receives uplink packet data from the at least one mobile station while the buffer means is emptied of protocol data units destined for the at least one mobile station.